REMARKS

1. In the above-captioned Office Action, the Examiner rejected claims 13-16 and 18-20 under 35 U.S.C. §101. Claims 1, 8, and 13-20 were rejected under 35 U.S.C. §102(b) in view of Burns et al. (U.S. Patent No. 5,063,506). Claims 2-7 and 9-12 were rejected under 35 U.S.C. §103(a) given Burns in view of Dudle (U.S. Patent No. 5,570,291). These rejections are traversed and reconsideration is hereby respectfully requested.

2. The Examiner stated that the 35 U.S.C. §102(b) rejection is in view of Burns, calling out U.S. Patent No. 5,063,506. Since U.S. Patent No. 5,063,506 is the Brockwell patent, the Applicant responds under the assumption that the Examiner intended to issue a 35 U.S.C. §102(b) rejection is in view of Burns (U.S. Patent No. 5,189,606) rather than Brockwell et al. (U.S. Patent No. 5,063,506).

3. Claims 13-16 and 18-20 were rejected under 35 U.S.C. §101. Independent claims 13, 15, and 18 as amended above render claims 13-16 and 18-20 in compliance with 35 U.S.C. §101.

4. Claims 1, 8, and 13-20 were rejected under 35 U.S.C. §102(b) in view of Burns. Claims 2-7 and 9-12 were rejected under 35 U.S.C. §103(a) given Burns in view of Dudle. Prior to discussing the merits of the Examiner's position, the applicant believes it would be helpful to first briefly describe and characterize the Burns reference.

THE BURNS REFERENCE

The following 19 examples from Burns illustrate how Burns teaches a costing method that utilizes a variety of calculations and factors (shown in italics) to estimate/calculate costs, which calculations and factors do not yield a lowest potential cost:

> It includes a knowledge base according to feature 5 which contains an escalation code that links the facility to the correct escalation factors. It includes a process which shows the user the available codes and allows the user to enter only valid codes. It includes a means of storing the codes and retrieving the correct *escalation factors for use in calculating the construction cost* [Column 5, lines 12-18, emphasis added].

It includes a knowledge base according to feature 5 which contains a facility category code that links the facility category to knowledge bases for determining the *regression equations to use for the primary and supporting facility costs* for the comparative process; the resource distribution factors to use to distribute the costs to the CCMAS-UNIFORMAT System, CCMAS-UNIFORMAT Subsystem, CCMAS unique Assembly, CSI Divisional level of the hierarchy by materials, labor, equipment, for the comparative process; the facility energy use code; and links to the facility type and facility family codes. It includes a process which shows the user the available codes and allows the user to enter only valid codes. It includes a means of storing the codes and retrieving the information from the appropriate data files for use in calculating the facility cost [Column 5, lines 41-56, emphasis added].

It includes a means according to feature 2 to calculate the direct cost of construction including all of the *work necessary to build the facility in the location specified* using any one or a combination of three estimating methods. It includes a *comparative method based on historical costs of projects* at the facility type level of the hierarchy with adjustment factors that break the costs down to the Element level of the hierarchy [Column 6, lines 10-18, emphasis added].

It includes a comparative method according to feature 14 *based on historical costs* of projects at the facility category level of the hierarchy with adjustment factors that break the costs down to the CCMAS-UNIFORMAT System, CSI Division level then distribution factors that further break the cost out at the Element level of the hierarchy for both the primary facility and supporting facilities (work outside the five foot line of the building). It includes a process that *takes historical facility construction costs from completed facilities* from commercial and government sources and puts them together into a common knowledge base; assigns facility category codes to each facility; location, units of measure, scope, award date, location adjustment factor at award, and costs for the primary facility and supporting facilities [Column 6, lines 33-48, emphasis added].

It includes a process according to feature 15 which combines facility categories together into facility types; allows the user to select limits on facility size, location, data sources, and units of measure; selects the facility family to assign to this facility type; allows the user to *select the escalation rates used*; and then *performs a regression on the data* using one of the following equations at the users option to determine the equation coefficients for the primary facility: ... [Column 6, lines 50-58, emphasis added].

It includes a process according to feature 15 that creates *regression equations coefficients* for the non-linear equation for three general categories of supporting facility work (outside the five foot line of the building) and an overall split of costs between the three major categories of supporting facilities (pavements,

utilities, and site improvements) by System level of the hierarchy *using historical data* [Column 7, lines 36-44, emphasis added].

It includes a means according to feature 2 to identify and apply modifiers to the direct costs for different construction methods; for risk associated to the project; to adjust the project schedule; to *adjust the cost for differences in material, labor and equipment prices at different locations; for the effects of inflation over time*; to account for supervision and inspection of the construction; *pay for the design*; and pay for unforeseen conditions that may be encountered during construction. It includes a process that links the modifiers to the direct cost at different levels of the hierarchy structure [Column 15, lines 26-36, emphasis added].

(1) Historical Building Cost Knowledge Base Table--T105. This table is updated by a process that *takes raw historical facility construction costs* from completed construction projects from commercial and government sources and puts it together into a common knowledge base (T105). The process assigns standard Air Force codes to identify the facility type, location, units of measure, scope, award date, location adjustment factor at award, and costs for the primary building and work outside the five foot line of the building (supporting facilities). The process produces an error listing identifying all records that did not meet certain criteria such as size of project, identifiable location, data in all fields, etc. The user can them either ignore the faulty data, thus leaving it out of the CCMAS knowledge base, or get the information corrected from the source. The output from this process is a knowledge base (T105) of completed projects with data is all required fields. *CCMAS uses raw historical construction costs from DoD and commercial sources*. There are currently over 25,000 completed construction projects stored in CCMAS. The following Tables (knowledge bases) are used by this module: ... [Column 25, lines 15-37, emphasis added].

(e) Finally, *the system performs the regression analysis and shows the user the results*. At this time the process is complete unless the user wants to make further adjustments and rerun the regression. This process involves performing the regressions on the primary facility to compute the regression coefficients. Additionally, the *process calculates average supporting facility percentages*. These percentages are for the work outside the five foot line of the building for pavements, utilities, and site improvements. These percentages are based on the raw data supplied from the DoD and Air Force. The raw data provided only contains an overall cost for work outside the five foot line. The split between pavements, utilities, and site improvements is based on a separate analysis shown below. The following Tables (knowledge bases) are used to create Table T103: ... [Column 26, lines 24-40, emphasis added].

A *regression analysis* is performed for the three major supporting facility categories by family category code using the following nonlinear equation: ... Additionally, *averages for each of the three major supporting facility categories*

are taken to determine the percentage split between them [Column 27, lines 19-28, emphasis added].

Create Modifier Sets. This section (FIG. 8, comprising FIGS. 8a-8e) of CCMAS processes modifiers to the direct costs. There are seven modifiers included in this section of CCMAS. They are for Construction Methods, Project Definition, Project Schedule, location, Escalation, Construction Management, and Project Design. ***All of the CCMAS cost data (historical, line items, etc.) is normalized to a specific location and time frame.*** This *normalization* also covers the productivity factors used to determine how much labor and equipment is used in the composite items. The modifiers are used to adjust the CCMAS costs to account for differences in construction techniques; labor productivity; costs for materials, labor, and equipment; account for supervision and inspection of the construction; pay for the design; and pay for unforeseen conditions that may be encountered [Column 42, line 62 through column 43, line 10, emphasis added].

Construction Methods Modifier. This modifier is used to *adjust project costs* by the 18 CSI Divisions and five CCMAS resources (material cost, labor cost, equipment cost, labor hours, and equipment hours) *by location*. It is used to account for different materials, labor, and equipment used in different locations, especially overseas. *It is not a location adjustment to account for different prices and wages, that is the location modifier*. This modifier is used to account for one location using labor by hand to excavate a trench vs using equipment. This modifier adjusts the labor and equipment hours used to get the total cost [Column 43, lines 14-25, emphasis added].

Project Definition Modifier. *This modifier is used to adjust the project for unknown conditions*. It is a risk factor to account for what stage of design the project is in and how much is known about the project by CCMAS-UNIFORMAT system. The project definition modifier factor allows CCMAS to produce a range *estimate* to show that the project cost could grow to if the worst conditions come true. The modifier consists of a series of algorithms, questions, and factors [Column 43, lines 46-54, emphasis added].

d. Location Modifiers. The location modifiers are developed based on surveys of a breadbasket of materials, labor, and equipment in the location. Factors are developed by CSI Division for material, labor, and equipment. *These factors are normalized to the Department of Defense 144 city average*. The 144 cities are three cities from each of the 48 continental states that are near major military installations. These location factors are used by other modules to *normalize the knowledge base to this same 144 city average*. The factors are used to *adjust the data base costs to costs in the location of the project* [Column 44, lines 45-56, emphasis added].

e. Escalation Factors. *Escalation modifiers* are developed by the Office of Management and Budget (OMB) and distributed by the Department of Defense.

These factors are developed by major program, appropriation type, and as of date. Each major Air Force project may use a different set of escalation factors depending upon the project and appropriation used for the project. CCMAS stores the escalation factors to account for each difference. In addition to having the data *normalized to the 144 city average*, all appropriate data in CCMAS is *normalized to a specific point in time*. This point in time is stored in the Table (T116). This reference point is used to determine the *escalation factors used for the project* [Column 44, line 67 through 45, line 12, emphasis added].

(5) Contractor Modifier Generic Model Insurance, Bonds, and Permits Table--T157. These factors all operate on *estimated total project cost* rather than direct cost. *Estimated* total project cost is based on the following algorithm: ... [Column 48, lines 16-20, emphasis added].

(7) Contractor Modifier Generic Model Workman's Compensation by CSI Division Table--T159. This table maps the 23 trades used for workmen's compensation to the 18 CSI Divisions. This data was developed based on expert experience. It is used to apply the 23 workman's compensation factors by CSI Division. For example, CSI Division 08--Doors, Window, & Glass uses 35% General Carpentry, 35% Glaziers, and 30% Steel Erection--Doors & Sash. Therefore, the overall workmen's compensation factors for CSI Division 08 is *weighted average of these three items using the percentages in this table* [Column 48, lines 37-48, emphasis added].

(14) CCMAS Line-Items Table--T106. This table contains over 40,000 individual Composites or Elements using the CSI WBS. These are the *actual costed items* used by the models and QTO system. These items are at what we call the Quantity Take Off level of detail [Column 50, lines 3-8, emphasis added].

Direct costs are brought from the 144 *City National Average* of the data base to the specific place and time of construction using modifiers. Material, labor, and equipment costs can be adjusted by CSI and then *escalated* to the appropriate period of construction. Contractor costs and profits are added to modified directs costs to create the construction contract cost [Column 66, lines 27-33, emphasis added].

The above examples from Burns show that he describes a method of obtaining costs for a construction project such as building or road based on averaged, weighted-averaged, normalized, regressed, escalated, historical, actual, and geographically-fixed costs. Averaged normalized, regressed, escalated, historical, actual, and/or geographically-fixed costs will not yield a lowest potential cost.

Burns teaches of method of estimating/calculating what is most closely known as *actual* costs for an object such as a building or highway by using method steps such

as averaging, normalizing, regressioning, and weighting. Burns does *not* teach or suggest any method that *determines the* ***lowest potential cost*** for a part, as set forth in various ways in the claims as amended above. Burns also fails to teach identifying the cost components as set forth in the claims above. Dudle also fails to teach or suggest any method that determines the *lowest potential cost* for a part, as set forth in various ways in the claims as amended above.

Neither Burns nor Dudle teaches or suggests determining or totaling lowest cost potential values nor an ought-to-be cost. Thus, Burns and Dudle fail to teach the subject matter of the independent claims 1, 2, 5, 8, 9, 13, 15, and 18. Hence, the applicant respectfully submits that claims 1, 2, 5, 8, 9, 13, 15, and 18 may be passed to allowance.

With respect to claim 17, neither Burns nor Dudle teaches taking into account multiple designs.

Furthermore, claims 3, 4, 6, 7, 10-12, 14, 16, 17, 19, and 20 are dependent upon an independent claim that is shown to be allowable. For all these reasons, the dependent claims are themselves allowable.

5. No new subject matter is introduced by the amendments to the claims.

6. The Examiner is invited to contact the undersigned by telephone or facsimile if the Examiner believes that such a communication may advance the prosecution of the present application. Notice of allowance of claims 1-20 is hereby respectfully requested.

Respectfully submitted,

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